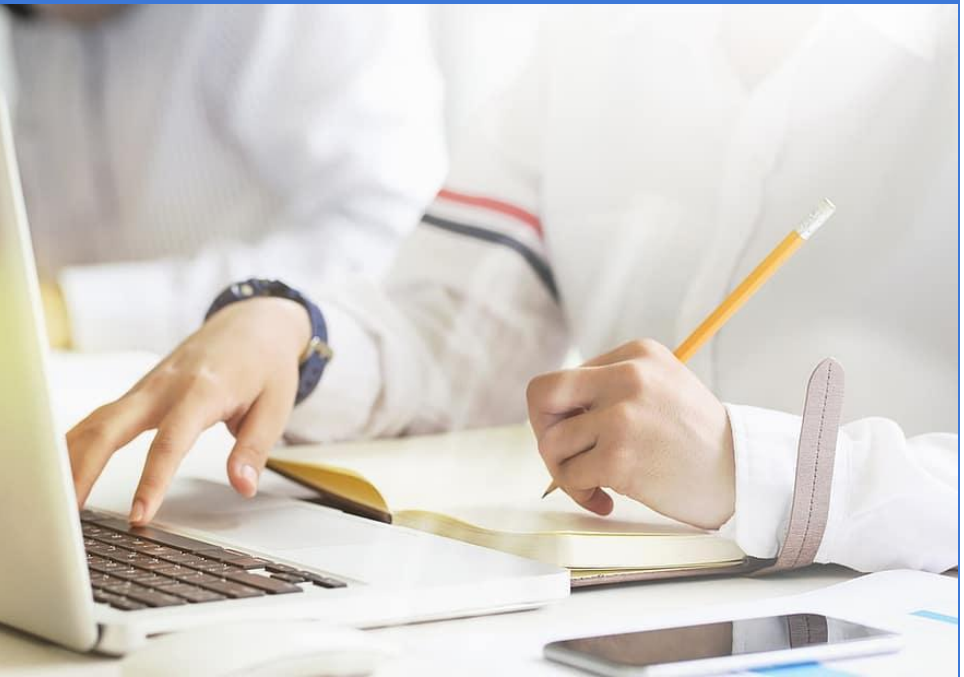
Wall Framing with Shoes and Plates

What are they and how do we calculate for them?

Outcomes



By the end of this course, you will be able to:

- Understand the purpose of single shoes and double plates in the wall framing process.
- Calculate the amount of material required for shoes and plates.

Notice and Wonder

Look at the three images below.

- Write one thing you notice .
- Write one thing you are wondering about.

What did you notice and wonder about the three images?

Share your thoughts with the group.

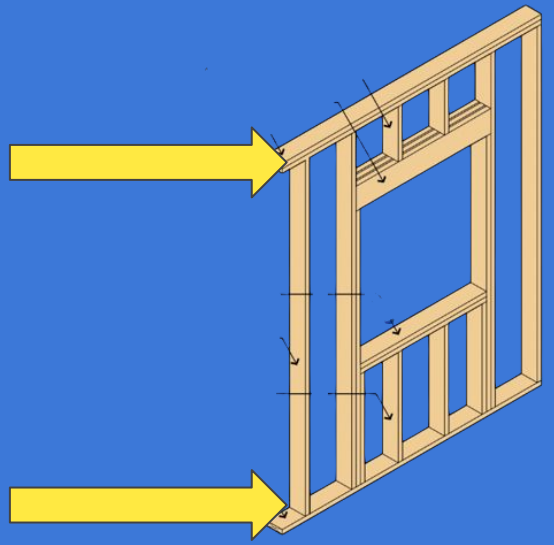
What are single shoes and double plates?

What is wall framing?

Wall framing is the process of attaching building materials together to create a structure like a wall.

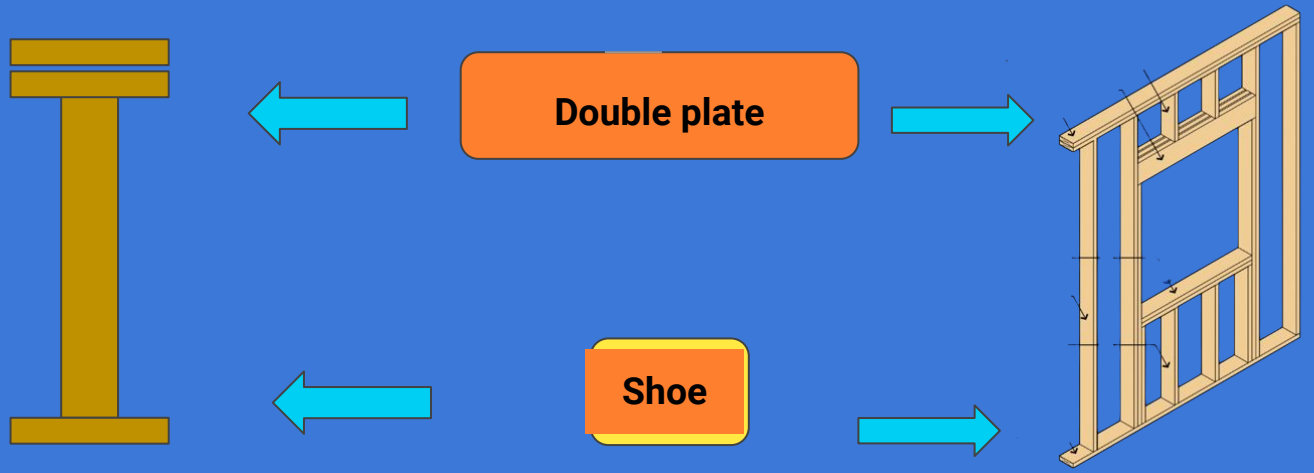
What are shoes and plates?

Shoes and ***plates*** are the horizontal pieces of a wall frame that are connected by studs.



Types of shoes and plates

Double plates, also known as top plates, are the top two layers of lumber held together by studs so the second layer of the structure can be attached to the first layer.



A ***shoe***, also known as a single plate or bottom plate, is the bottom piece of the wall frame used to connect the wall to the floor or foundation.

Video

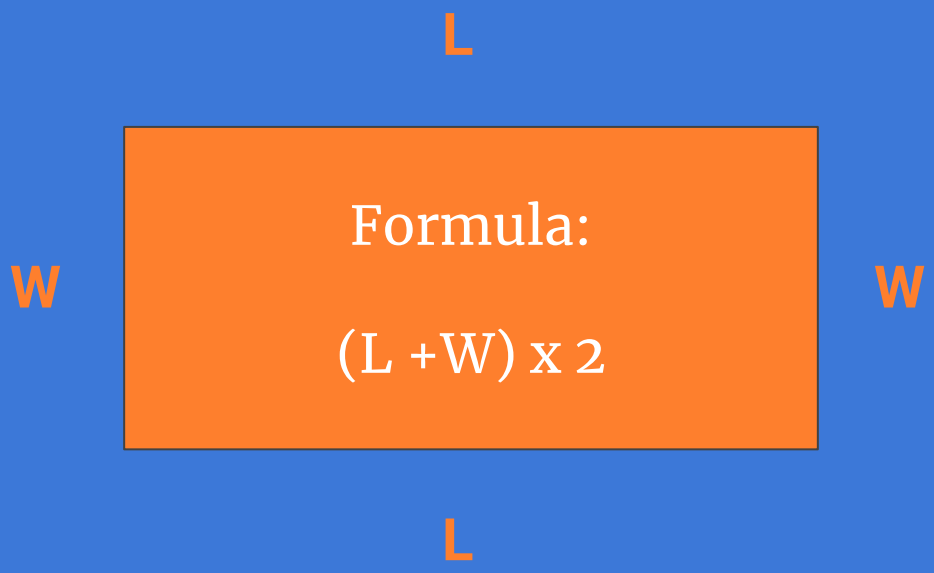

Building Walls:
Why You Need A Double Plate
PERKINS
BUILDER
Brothers

What is the difference between a shoe and a double plate?

Let’s check in!

How do you calculate the amount of material required for shoes and plates?

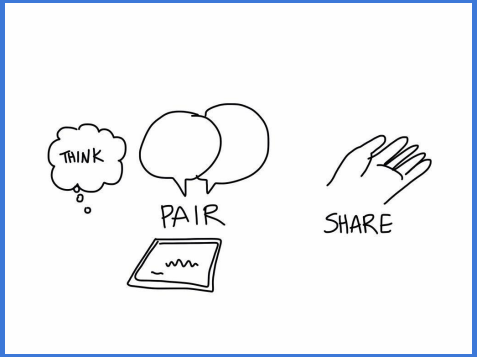
What is perimeter?



What situations would require us to find the perimeter in real life?

Think-Pair-Share

- Take some time to think about your response by yourself.
- Share your response with an elbow partner.
- Be prepared to share with the group.

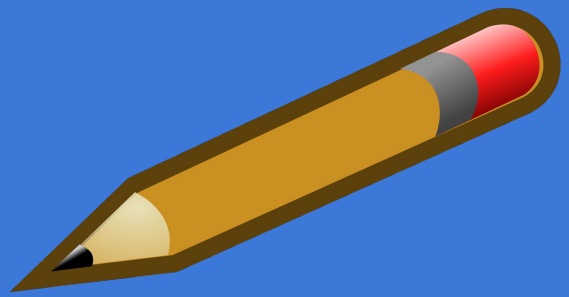


Calculating the amount of material for shoes and plates

Material needed for a single shoe and double top plate of exterior wall is three times the perimeter.

The formula is:

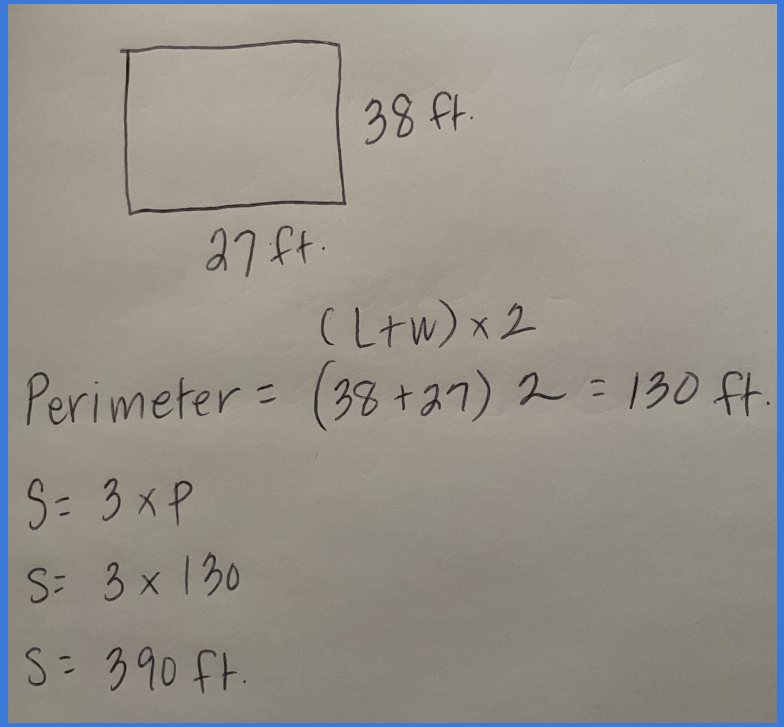
$$S = 3 \times P$$



Example using formula S= 3 x P

Here is an example of how to use the formula.

1. Find the perimeter
2. Substitute the perimeter (P) in the formula S = 3 x P



Are there any questions on how to use the formulas?

Let’s check in!

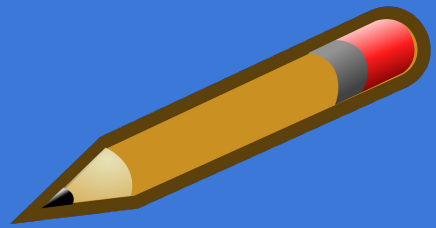
Your Turn!

Directions:

You will:

- Use the formulas used to solve the problems on your own.
- Share your work on the chart paper for the letter you have been assigned.
- Check your work with others that have been assigned that letter.
- Participate in gallery walk.

Time to work



You will have 10 minutes to complete these problems on your own using the formulas.

Formula Practice Problem Sheet

Construction Math: Shoes and Plates

Directions:
Solve each problem using the formulas.

Formulas
Perimeter: P= (L+W) x 2
Amount for shoes and plates: S= 3 x P

A.	**B.**	**C**	**D.**	**E.**
A rectangular building measures 45 ft by 23 ft. Determine the number of linear feet needed for the shoe and double top plates.	A rectangular building measures 24 ft by 15 ft. Determine the number of linear feet needed for the shoe and double top plates.	A rectangular building measures 33 ft by 12 ft. Determine the number of linear feet needed for the shoe and double top plates..	A rectangular building measures 60 ft by 30 ft. Determine the number of linear feet needed for the shoe and double top plates.	A rectangular building measures 55 ft by 21 ft. Determine the number of linear feet needed for the shoe and double top plates.

Gallery Walk

Directions:

- Find the chart using the letter you were assigned.
- Check your work with others that were assigned to your letter.
- Choose one person to share their work on the chart paper using the marker provided.
- When complete, walk around to look at how others solved the problem.

Short Quiz

Show what you know!

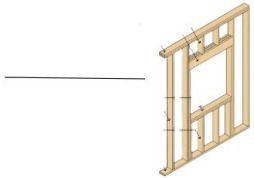
- You will now take a short quiz to show what you have learned.
- When you are done, please raise your hand so it can be collected.

Name:_____ Date_____

5.2 Construction Math: Shoes and Plates Quiz

Part A: Label the diagram using the word bank.

Shoe	double plate



_____ _____

Part B: Solve the problem using the formula S= 3 x P

A rectangular building measures 25 ft by 5 ft.

Determine the number of linear feet needed for the shoe and double top plates.

Answer: _____ft.

Summary

After taking this course, you will now be able to:

- Understand the purpose of single shoes and double plates in the wall framing process.
- Calculate the amount of material required for shoes and plates.

Structures must withstand forces like wind, hurricanes, snow and other types of weather. This is why planning and determining if you have enough materials to build a strong wall frame is important.